

ESTI Protocol

Possible Application for our product: detection of heavy metals. Nowadays there is a method to detect presence of heavy metals by using a lab machine called ICPMS. This machine is very expensive and immobile. She said that if we develop something that can make bacteria swim towards silicon she would buy it.

More details about heavy metal we can find in the thesis of her student Georgy which is found on her site.

According to Esti bacteria do not diffuse-they swim, so the bacteria move together.

How can we store our chip?

If we put our chip in the fridge, the bacteria can enter a stationary phase, and we need to think about how we can get the bacteria back to normal activity. (for this purpose we can consult Sima)

Esti thinks that we should buy an On-shelf product for the chip.

The chips she uses in her lab are based on a polymer called PDMS (cost ~500 shekels for the whole iGEM period of time) which is permeable to oxygen. There are micro channels in those chips.

In order to prepare these chips on our own, we need to order from the supplier a suitable mask (the role of the mask is to dictate the final shape of the PDMS. Then the PDMS is baked (in a dedicated furnace). As a result of the baking process the PDMS becomes rigid.

According to Esti the bacteria are very fast, they can reach the other side of the Channel within several minutes.

How can we insert a membrane to the chip?

There are special companies like BD/ 3M that produce it. This membrane can be stacked in the PDMS before being baked.

Esti suggests that the detection itself can be made by techniques of image processing